

Turn-cover type or folding type mobile telephone set of not turning cover or unfolding folder when answering

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The invention relates to a mobile telephone terminal comprising a housing, a member pivotally mounted to the housing such that the terminal can be brought into an open and a closed state depending on the position of the member and a speaker unit including a first speaker device which is operable for voice output in the closed state. Said member may be a flip or a folder.

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Turn-cover type or folding type mobile telephone set of not turning cover or unfolding folder when answering

Description of corresponding document: EP0977414

[0001] The present invention relates to a mobile telephone terminal, and in particular, to a flip-up type or folder type mobile telephone terminal.

[0002] Mobile telephone terminals are available which are compact, lightweight and which have high sensitivity. Further, the mobile telephone terminals may be classified into either bar type, flip type, and a folder type according to its shape. Among the three categories, the flip type and folder type mobile telephone terminals are most popular. The flip type and folder type mobile telephone terminals are advantageous in that the flip and folder for covering the body of the mobile telephone terminal prevents mis-pressing of buttons and also functions as a reflection plate for the voice during conversation. Moreover, it is possible to install a microphone or speaker on the flip or folder of the mobile telephone terminal, thereby contributing to miniaturization of the mobile telephone terminal.

[0003] A general flip type mobile telephone terminal is composed of a body, a flip and a hinge device for openably mechanically coupling the flip to the body. Here, the hinge device acts as an axle of the flip. This flip type mobile telephone terminal can be further categorized into a flip-down type and a flip-up type. The flip-down type mobile telephone terminal has an axle of the flip mounted on the lower end of the body, while the flip-up type mobile telephone terminal has the axle of the flip mounted on the upper end of the body. A general folder type mobile telephone terminal includes a body, a folder and a hinge device for mechanically coupling the folder to the body.

[0004] The flip-up type and folder type mobile telephone terminals, unlike the bar type and flip-down type mobile telephone terminals, have a speaker device installed in an inner side of the flip and the folder. Accordingly, when the flip or the folder is closed with respect to the body, the user cannot communicate with the other party using the speaker device unless he or she opens the flip or the folder. In particular, when the user holds something in his or her hands and receives an incoming call, he or she cannot easily open the flip or the folder to answer the incoming call.

[0005] Therefore, there is a need for a flip-up type or folder type mobile telephone terminal which enables the user to communicate with the other party without being required to open the flip or the folder.

[0006] It is the object of the present invention to provide a flip-up type or folder type mobile telephone terminal which enables a user to answer an incoming call without opening a flip or a folder.

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[0007] This object is solved by the subject matters of independent claim 1.

[0008] Preferred embodiments are defined by the dependent claims.

[0009] According to one embodiment of the present invention, a flip-up type mobile telephone terminal includes a speaker unit which has first and second speakers installed at front and rear sides of a flip of the telephone terminal, respectively, facing the opposite directions. The speaker unit further has a partition intervening between the first and second speakers to prevent interference therebetween. A flip open sensor senses an open state of the flip and a controller switches a voice output path to the first speaker when the flip is closed and to the second speaker when the flip is open. Further, a microphone device is installed in a bottom of the body of the telephone terminal.

[0010] According to another embodiment of the present invention, a folder type mobile telephone terminal includes a speaker unit having first and second speakers installed at front and rear sides of a folder of the telephone terminal, respectively, facing opposite directions. The speaker unit further has a partition intervening between the first and second speakers to prevent interference therebetween. A folder-open sensor senses an open state of the folder, and a controller switches a voice output path to the first speaker when the folder is closed and to the second speaker when the folder is open.

[0011] According to still another embodiment of the present invention, a flip-up type mobile telephone terminal includes a first speaker device installed in an inner side of a flip of the telephone terminal; a second speaker device installed in a front, upper portion of a body of the telephone terminal such that the second speaker device is not covered by the flip when the flip is closed; a flip-open sensor for sensing an open state of the flip; and a controller for detecting the open state of the flip through the flip-open sensor, and switching a voice output path to the second speaker device when the flip is closed and to the first speaker device when the flip is open. The flip-up type mobile telephone terminal further includes a microphone device installed in a bottom of the body.

[0012] According to still another embodiment of the present invention, a folder type mobile telephone terminal includes a first speaker device installed in an inner side of a folder of the telephone terminal; a second speaker device installed in an outer, upper portion of the folder; a folder-open sensor for sensing an open state of the folder; and a controller for detecting the open state of the folder through the folder open sensor, and switching a voice output path to the second speaker device when the folder is closed and to the first speaker device when the folder is open. The folder type mobile telephone terminal further includes a microphone device installed in a bottom of the body.

[0013] The invention will become more apparent from the following detailed

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description when taken in conjunction with the accompanying drawings in which like reference numerals indicate like parts. In the drawings:

FIG. 1 is a perspective view of a flip-up type mobile telephone terminal with a flip closed, according to an embodiment of the present invention;

FIG. 2 is a perspective view of the flip-up type mobile telephone with the flip opened according to an embodiment of the present invention;

FIG. 3 is a diagram illustrating a structure of a speaker unit according to an embodiment of the present invention;

FIG. 4 is a diagram illustrating a device for switching a voice output path according to an embodiment of the present invention;

FIG. 5 is a perspective view of a folder type mobile telephone terminal with a folder closed, according to an embodiment of the present invention; and

FIG. 6 is a perspective view of the folder type mobile telephone terminal with the folder opened.

FIG. 7 is a perspective view of a flip-up type mobile telephone terminal with a flip closed, according to another embodiment of the present invention.

FIG. 8 is a perspective view of the flip-up type mobile telephone of FIG. 7 with the flip opened.

FIG. 9 is a perspective view of a folder type mobile telephone terminal with a folder closed, according to another embodiment of the present invention; and

FIG. 10 is a perspective view of the folder type mobile telephone of FIG. 9 terminal with the folder opened.

[0014] Preferred embodiments of the present invention will be described hereinbelow with reference to the accompanying drawings. In the following description, well known functions or constructions are not described in detail since they would obscure the invention in unnecessary detail.

[0015] A first embodiment will now be described in greater detail with reference to FIGs. 1 and 2. A flip-up type mobile telephone terminal according to this embodiment of the present invention is illustrated with a closed flip in FIG. 1. FIG. 2 illustrates the flip-up type mobile telephone terminal with an open flip. The mobile telephone terminal includes a body 100, a flip 102, and a hinge device 112 for mechanically coupling the flip 102 to the body 100. The hinge device 112 is mounted on either side of an LCD (Liquid Crystal Display) unit 104 for mechanically coupling the flip 102 to the body 100. A shaft of the hinge device 112 is secured to hinge knuckles 110 of the flip 102. Here, for convenience, FIGs. 1 and 2 selectively illustrate an exposed display window of the LCD unit 104 and an exposed part of the hinge device 112. The flip 102 has necks 108 extending to either end of the hinge device 112, and the hinge knuckles 110 are formed at ends of the respective necks 108. In the illustrated structure, the flip 102 rotates around an axis A1 represented by a dot-and-dash line, to be opened and closed with respect to the body 100.

[0016] Further, an antenna device 106 is placed at one side of the upper

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end of the body 100, and the LCD unit 104 is located below under the antenna device 106. Moreover, buttons 114 and a keypad 116 are located below the LCD unit 104. A reed switch 120 is built in a specific portion of the front side of the body 100 such that the reed switch 120 is covered when flip 102 is closed. A magnet 122 is built in an inner side of the flip 102 so that the magnet 122 may face the reed switch 120 when the flip 102 is closed. The reed switch 120 and the magnet 122 constitute a flip-open sensor for sensing an open state of the flip 102.

[0017] Referring to FIG. 3, unlike the conventional flip-up type mobile telephone terminal, the novel flip-up type mobile telephone terminal of the present invention further includes two separate speakers 118 and 124. As illustrated in FIG. 3, the first and second speakers 118 and 124 are assembled in a single speaker unit 130 and then installed in the flip 102. The speaker unit 130 is composed of a first speaker 118, a second speaker 124 and a partition 128. The first and second speakers 118 and 124 are installed at front and rear (i.e., outer and inner) sides of the flip 102, respectively, facing opposite directions, with the partition 128 intervening therebetween. It is preferable that the partition 128 is made of a material which prevents interference between the first and second speakers 118 and 124. By mounting two separate speakers on either side of the flip 102, the user can talk with the other party through the first speaker 118, in the situation where the flip 102 is closed.

[0018] In a conventional flip-up type mobile telephone terminal, a microphone device is typically installed in a front, lower portion of the body 100. With the conventional microphone placement, if the user uses the first speaker 118 positioned in accordance with the present invention (i.e., mounted on either side of the flip), when the flip 102 is closed, the distance between the first speaker 118 and the microphone device is relatively short, as compared with the case when the user uses the second speaker 124 when the flip 102 is open. Therefore, in order to prevent an influence between the first speaker 118 and the microphone device 126 when the flip is closed, the microphone device 126 is preferably installed in a bottom corner of the body 100. As is well known in the art, the distance between a transmitter including a microphone device and a receiver including a speaker device should be over 14cm, in order to secure an ear-to-mouth distance of the user. In the light of the foregoing, the microphone device 126 is installed in the bottom corner of the body 100 so that the short distance between the first speaker 118 and the microphone device 126 may not influence the call (i.e., the conversation with the other party).

[0019] FIG. 4 illustrates a device for switching a voice output path according to an embodiment of the present invention. When the flip or folder is open with respect to the body, a flip-open sensor senses the open state of the flip, and a controller switches a voice output path to a second speaker when the flip is open, and to a first speaker when the flip is closed.

[0020] The switching device comprises a flip-open sensor 132 further

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comprising a reed switch 120, a magnet 122 and a resistor R1. As illustrated, the reed switch 120 and the resistor R1 are connected in series between a power supply voltage Vcc and ground. A connection node between the resistor R1 and the reed switch 120 is connected to an input node of a microprocessor unit (MPU) 134 of the mobile telephone terminal. As illustrated in FIG. 2, the reed switch 120 faces the magnet 122.

Accordingly, when the flip 102 is open, the reed switch 120 is turned off, so that a logic "high" signal is applied to the MPU 134 via the input mode.

Likewise, when the flip 102 is closed, the reed switch 120 is actuated, so that a logic "low" signal is applied to the MPU 134. As a result, the MPU 134 can monitor open and close states of the flip 102 through the flip-open sensor 132. The MPU 134 is so programmed as to control a switch 138 according to the open and close states of the flip 102. That is, the MPU 134 connects the switch 138 to the first speaker 118 when the flip 102 is closed, and to the second speaker 124 when the flip 102 is open. Here, the switch 138, having a common node connected to an output node of a vocoder 136 of the telephone terminal, a first contact node connected to the first speaker 118 and a second contact node connected to the second speaker 124, switches a voice output path to a selected one of the first and second speakers 118 and 124 under the control of the MPU 134. As usual, the vocoder 136 encodes a voice signal input from the microphone device 126 to provide encoded voice data to the MPU 134, and decodes voice data input from the MPU 134 to provide a decoded voice signal to the voice output node thereof.

[0021] As a result, when the flip 102 is closed, the voice output path is switched to the first speaker 118 so that the user can talk with the other party using the first speaker 118. Therefore, upon receipt of an incoming call, the user can answer the incoming call, without opening the flip 102, by simply pressing one (e.g., a SEND button) of the buttons 114. Alternatively, when the flip 102 is open, the voice output path is switched to the second speaker 124 so that the user can ordinarily talk with the other party using the second speaker 124.

[0022] Similarly, the invention can be also applied to a folder type mobile telephone terminal, such as the one illustrated in FIG. 5. FIG. 5 illustrates, as another embodiment of the invention, a folder type mobile telephone terminal with a folder closed, and FIG. 6 illustrates the folder type mobile telephone terminal with the folder opened. The folder type mobile telephone terminal includes a body 200, a folder 202, and a hinge device 208 for mechanically coupling the folder 202 to the body 200. The hinge device 208 is formed at an upper end of the body 200. Hinge knuckles 214 are symmetrically formed at both ends of the hinge device 208, facing each other, along an upper end of the folder 202 hinged to the body 200. The hinge knuckles 214 are secured to the hinge device 208 through slots 216. In this structure, the folder 202 rotates around an axis A1 represented by a dot-and-dash line, thus to be opened and closed with respect to the body 200.

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[0023] Further, an antenna device 206 is placed at one side of the upper end of the body 200. A center arm 210 is formed along the upper end of the body 200, and two side arms 212 are formed at either side of the center arm 210. The slots 216 are prepared between the center arm 210 and the side arms 212. An LCD unit 204 is located beneath the antenna device 206. Moreover, a keypad 218 is placed below the LCD unit 204. A reed switch 226 is built in a specific portion of the front side of the body 200 such that the reed switch 226 is covered when folder 202 is closed. A magnet 228 is built in an inner side of folder 202 so that the magnet 228 may face the reed switch 226 when the folder 202 is closed. The reed switch 226 and the magnet 228 constitute a folder-open sensor for sensing an open state of the folder 202. Here, for convenience, FIGs. 4 and 5 selectively illustrate an exposed display window of the LCD unit 104 and an exposed part of the hinge device 208.

[0024] Like the flip-up type mobile telephone terminal shown in FIGs. 1 and 2, the folder type mobile telephone terminal according to the invention also includes two separate speakers 220 and 224. In the same manner, the first and second speakers 220 and 224 assembled in the single speaker unit and installed at front and rear (or outer and inner) sides of the folder 202, respectively, facing the opposite directions, with the partition intervening therebetween. Accordingly, the user can talk with the other party through the first speaker 220 when the folder 202 is closed. In addition, a microphone device 222 is installed in a bottom corner of the body 200, in the same manner as shown in FIGs. 1 and 2.

[0025] Fundamentally, the folder type mobile telephone terminal of FIGs. 5 and 6 operates in the same manner as the flip-up type mobile telephone terminal of FIGs. 1 and 2. Therefore, a circuit for switching the voice output path to the first or second speaker 220 or 224 according to open and close states of the folder 202 has the same structure as that of FIG. 4.

[0026] As a result, when the folder 202 is closed, the voice output path is switched to the first speaker 220 so that the user can talk with the other party using the first speaker 220. Therefore, upon receipt of an incoming call, the user can answer the incoming call, even without opening the folder 202, by simply pressing a button 230 mounted on a side of the body 200. Alternatively, when the folder 202 is open, the voice output path is switched to the second speaker 224 so that the user can ordinarily talk with the other party using the second speaker 224.

[0027] As described above, the flip-up type or folder type mobile telephone terminal has a speaker unit including first and second speakers facing front and rear sides of a flip or folder, and switches a voice output path to the first or second speaker according to open and close states of the flip or the folder. Therefore, the user can communicate with the other party, without opening the flip or the folder. >

[0028] FIG. 7 illustrates a flip-up type mobile telephone terminal according

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to another embodiment of the present invention, the flip of which is closed. FIG. 8 illustrates the flip-up type mobile telephone terminal, the flip of which is open.

[0029] Unlike the flip-type mobile telephone terminal as illustrated in FIGs. 1 and 2, the flip-up type mobile telephone terminal of FIGs. 7 and 8 includes two separate speaker devices 300 and 302 (see FIG. 7). The first speaker device 300 is installed in an inner side of the flip 102 in the same manner as the conventional speaker device. However, the second speaker device 302 is installed in a front, upper portion of the body 100 such that the second speaker device 302 is not covered by the flip 102 when the flip 102 is closed. By adding the second speaker device 302, the user can speak with the other party through the second speaker device 302 with the flip 102 closed.

[0030] Fundamentally, the flip-up type mobile telephone terminal of FIGs. 7 and 8 operate in the same manner as the flip-up type mobile telephone terminal of FIGs. 1 and 2. Therefore, a circuit for switching the voice output path to the first or second speaker 300 or 302 according to the open and closed states of the flip 102 has the same structure as that of FIG. 4.

[0031] FIG. 9 illustrates a folder type mobile telephone terminal with the folder closed, according to another embodiment of the present invention and FIG. 10 illustrates the folder type mobile telephone terminal with the folder opened.

[0032] Like the flip-up type mobile telephone terminal shown in FIGs. 7 and 8, this folder type mobile telephone terminal also includes two separate speaker devices 304 (see FIG. 10) and 306 (see FIG. 9). The first speaker device 304 is mounted on an inner side of the folder 202, in the same manner as the conventional speaker device. However, the second speaker device 306 is mounted on an outer, upper portion of the folder 202. By adding the second speaker device 306, the user can speak with the other party through the second speaker device 306 when the folder 202 is closed.

[0033] Fundamentally, the folder type mobile telephone terminal of FIGs. 9 and 10 operates in the same way as the flip-up type mobile telephone terminal of FIGs. 1 and 2. Therefore, a circuit for switching the voice output path to the first or second speaker device 304 or 306 according to open and closed states of the folder 202 has the same structure as that of FIG. 4.

[0034] As described above, the flip-up type or folder type mobile telephone terminal has first and second speaker devices disposed at different places such that the first speaker device is used when the flip or the folder is opened and the second speaker device is used when the flip or the folder is closed. Further, the mobile telephone terminal switches a voice output path to one of the first and second speaker devices according to open and closed state of flip or the folder. Therefore, the user can speak with the

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other party, without opening the flip or the folder.

[0035] In another preferred embodiment, either in flip or in folder configuration, the microphone device is prepared at the center of the bottom of the body. Further, in case that a short distance between the microphone device and the speaker device does not influence the call, the microphone device can be installed in the front, lower end of the body.

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Turn-cover type or folding type mobile telephone set of not turning cover or unfolding folder when answering

Claims of corresponding document: **EP0977414**

1. Mobile telephone terminal, comprising:

a housing (100, 200);

a member (102, 202) pivotally mounted to the housing such that the terminal can be brought into an open and a closed state depending on the position of the member; and

a speaker unit including a first speaker device (118, 220, 302, 306), said first speaker device being operable for voice output in the closed state.

2. The mobile telephone terminal according to claim 1, wherein said member is a flip (102).

3. The mobile telephone terminal according to claim 1, wherein said member is a folder (202).

4. The mobile telephone terminal according to one of claims 1 to 3, wherein said speaker unit further includes a second speaker device (124, 224, 304), and wherein the first and second speaker devices are situated at the outer and inner side of the member, respectively.

5. The mobile telephone terminal according to claim 4, wherein said first and second speaker devices are situated back-to-back with a partition (128) being disposed therebetween.

6. The mobile telephone terminal according to claim 4, wherein the first speaker device is situated at an outer upper portion of the member.

7. The mobile telephone terminal according to one of claims 1 to 3, wherein said speaker unit further includes a second speaker device (300) situated at an inner side of said member, and wherein said first speaker device is situated at a front upper portion of said housing and is not covered by said member in the closed state.

8. The mobile telephone terminal according to one of claims 4 to 7, further comprising a sensor (120, 122, 132, 226, 228) for detecting whether the terminal is in the open or the closed state.

9. The mobile telephone terminal according to claim 8, further comprising means (134, 138) for switching a voice output path to the first speaker device in the closed state and to the second speaker device in the open state.

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10. The mobile telephone terminal according to one of claims 4 to 9, further comprising a microphone device (126, 222) installed at the bottom of the housing.
11. The mobile telephone terminal according to claim 10, wherein the distance between said microphone device and said second speaker device is at least 14.5 centimetres.
12. The mobile telephone terminal according to claim 10 or 11, wherein the distance between said microphone device and said first speaker device is at least 14.5 centimetres.
13. The mobile telephone terminal according to one of claims 1 to 12, wherein said first speaker device is further operable for voice output in the open state.

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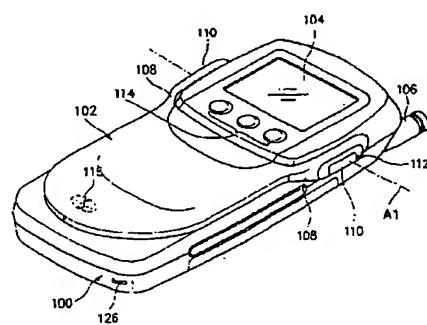
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权利要求书2页 说明书7页 附图页数9页

[54]发明名称 应答时不翻盖或打开折叠器的翻盖型或折叠型移动电话

[57]摘要

上翻盖型移动电话终端使用户即使不打开翻盖也能应答输入呼叫。扬声器单元包括分别安装在翻盖的前与后侧面上的面向相反方向的第一与第二扬声器，此扬声器单元还包括插在第一与第二扬声器之间以阻止其间干扰的隔板。翻盖打开 检测器检测翻盖的打开状态。控制器通过翻盖打开检测器检测翻盖的打开状态，并在翻盖闭合时将话音输出路径转换到第一扬声器和在翻盖打开时将话音输出路径转换到第二扬声器。话筒装置安装在主体底部中。



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权 利 要 求 书

1. 一种上翻盖型移动电话终端，包括：

扬声器单元，包括安装在电话终端翻盖的各自前与后侧上的面向相反方向的第一与第二扬声器，所述扬声器单元还具有设置在第一与第二扬声器之间以阻止其间干扰的隔板；

翻盖打开检测器，用于检测翻盖的打开状态；和

控制器，用于通过翻盖打开检测器检测翻盖的打开状态，并在闭合翻盖时将话音输出路径转换到第一扬声器，而在打开翻盖时将话音输出路径转换到第二扬声器。

10 2. 根据权利要求 1 的上翻盖型移动电话终端，还包括安装电话终端主体底部中的话筒装置。

3. 根据权利要求 1 的上翻盖型移动电话终端，其中所述话筒装置以离开所述第一与第二扬声器至少 14.5cm 的距离进行设置以适应用户耳至嘴的距离。

15 4. 一种折叠型移动电话终端，包括：

扬声器单元，包括分别安装在电话终端折叠器的前与后侧上的面向相反方向的第一与第二扬声器，所述扬声器单元具有插在第一与第二扬声器之间以阻止其间干扰的隔板；

折叠器打开检测器，用于检测折叠器的打开状态；和

20 控制器，用于通过折叠器打开检测器检测折叠器的打开状态，并在折叠器闭合时将话音输出路径转换到第一扬声器，而在折叠器打开时将话音输出路径转换到第二扬声器。

5. 根据权利要求 4 的折叠型移动电话终端，还包括安装在电话终端主体底部中的话筒装置。

25 6. 一种上翻盖型移动电话终端，包括：

外壳；

翻盖，可转动地固定到外壳上；和

扬声器单元，包括放置在翻盖中的至少一个扬声器，其中此扬声器可用于话音输出而不管翻盖的位置如何。

30 7. 根据权利要求 6 的上翻盖型移动电话终端，其中所述扬声器单元包括第一与第二扬声器，所述第一与第二扬声器之一安装在翻盖的前表面上，以便在所述翻盖闭合状态中操作，并且所述第一与第二扬

声器之一安装在所述翻盖的后侧表面上以便在所述翻盖打开状态中操作。

8. 根据权利要求 7 的上翻盖型移动电话终端，其中所述扬声器单元还包括设置在所述第一与第二扬声器之间的隔板。

5 9. 根据权利要求 7 的上翻盖型移动电话终端，还包括翻盖检测器和控制器，此控制器用于通过翻盖打开检测器检测翻盖的所述打开状态，并用于在所述翻盖处于打开状态时将话音输出转换到第一路径，和利用在所述翻盖处于闭合状态将所述话音输出转换到第二路径。

10 10. 根据权利要求 7 的上翻盖型移动电话终端，还包括可操作在所述翻盖的打开与闭合状态中的安装在所述上翻盖型移动电话终端的主体底部中的话筒装置。

11. 一种上翻盖型移动电话终端包括：

第一扬声器装置，安装在该移动电话终端的翻盖的内侧；

15 第二扬声器装置，安装在该电话终端的外侧的主体的上部，使得当翻盖闭合时不覆盖第二扬声器装置；

翻盖打开检测器，用于检测该翻盖的打开状态；和

控制器，通过所述翻盖打开检测器检测该翻盖的打开状态，并且当该翻盖闭合时将话音输出路径转换到第二扬声器装置，当该开盖打开时将其转换到第一扬声器装置。

20 12. 根据权利要求 11 的上翻盖型移动电话终端，还包括一话筒装置，安装在该电话终端的主体的底部。

13. 一种折叠型移动电话终端包括：

第一扬声器装置，安装在该电话终端的折叠器的内侧；

第二扬声器装置，安装在所述折叠器的外上部；

25 折叠器打开检测器，用于检测该折叠器的打开状态；和
控制器，通过所述折叠器打开检测器检测该折叠器的打开状态，并且当该折叠器闭合时将话音输出路径转换到第二扬声器装置，当该折叠器打开时转换到第一扬声器装置。

14. 根据权利要求 13 的折叠型移动电话终端，还包括一个话筒装置，安装在该电话终端的主体的底部。

说 明 书

应答时不翻盖或打开折叠器的
翻盖型或折叠型移动电话

5 本发明涉及移动电话终端，并且更具体地涉及上翻盖型或折叠型移动电话终端。

近来，移动电话终端的特征可能在于：小型化、轻量型并具有高灵敏度。而且，移动电话终端根据其形状分为杆型、翻盖型和折叠型。在这些类型的移动电话终端中，翻盖型和折叠型移动电话终端最受欢迎。翻盖型和折叠型移动电话终端的优点在于：用于遮盖移动电话终端主体的翻盖和折叠器阻止按钮的误按并在对话期间起着反射板的作用。而且，有可能在移动电话终端的翻盖或折叠器上安装话筒或扬声器，从而有助于移动电话终端的小型化。

15 一般翻盖型移动电话终端由主体、翻盖和用于可打开地将翻盖机械耦合到主体的铰链装置构成。这里，铰链装置作为翻盖的轴。这种翻盖型移动电话终端能再次分为上翻盖型和下翻盖型。下翻盖型移动电话终端具有安装在其主体较低端上的翻盖轴，而上翻盖型移动电话终端具有安装在主体上端的翻盖轴。一般折叠型移动电话终端包括主体、折叠器和用于可打开地将折叠器机械耦合到主体的铰链装置。

20 不同于杆型和下翻盖型移动电话终端，上翻盖型和折叠型移动电话终端具有安装在翻盖与折叠器内侧中的扬声器装置。因此，当翻盖或折叠器相对主体闭合时，用户不能利用扬声器装置与另一方交谈，除非他或她打开翻盖或折叠器。特别是，当用户在他手中持有某物并收到输入呼叫时，他不能容易地打开翻盖或折叠器来应答输入呼叫。

25 因此，需要不要求用户打开翻盖或折叠型也能使用户与另一方通信的上翻盖型或折叠器型移动电话终端。

本发明已达到消除上述缺点与问题的目的。因此，本发明的一个目的是提供一种上翻盖型或折叠型移动电话终端，使用户甚至不打开翻盖或折叠器也能应答输入呼叫。

30 根据本发明的一个方面，上翻盖型移动电话终端包括：一扬声器单元，具有反向相对的分别安装在电话终端的翻盖的前和后方的第一和第二扬声器，该扬声器单元还包括一个插在第一和第二扬声器之间

的部分以避免之间的干扰；一个翻盖打开检测器，检测该翻盖的打开状态；控制器，当该翻盖关闭时将话音输出路径转换到第一扬声器，当该翻盖打开时转换到第二扬声器。还有一个话筒装置安装在电话终端的主体的底部中。

5 根据本发明的另一方面，折叠型移动电话终端包括：一扬声器单元，具有反向相对的分别安装在电话终端的折叠器的前和后方的第一和第二扬声器，该扬声器单元还包括一个插在第一和第二扬声器之间的部分的避免之间的干扰；一个折叠器打开检测器，检测该折叠器的打开状态；控制器，当折叠器关闭时将话音输出路径转换到第一扬声器，当折叠器打开时转换到第二扬声器。

10 根据本发明的再一个方面，上翻盖型移动电话终端包括：第一扬声器装置，安装在电话终端翻盖的内侧中；第二扬声器装置，安装在电话终端主体的前面上部中，以致在闭合翻盖时，第二扬声器装置不被翻盖遮盖；翻盖打开检测器，用于检测翻盖的打开状态；和控制器，15 用于通过翻盖打开检测器检测翻盖的打开状态，并在闭合翻盖时将话音输出路径转换到第二扬声器装置，而在打开翻盖时将话音输出路径转换到第一扬声器装置。此上翻盖型移动电话终端还包括安装在主体底部中的话筒装置。

20 根据本发明的又一方面，折叠型移动电话终端包括：第一扬声器装置，安装在电话终端折叠器的内侧中；第二扬声器装置，安装在折叠器的外面上部中；折叠器打开检测器，用于检测折叠器的打开状态；和控制器，用于通过折叠器打开检测器检测折叠器的打开状态，并在折叠器闭合时将话音输出路径转换到第二扬声器装置，而在打开折叠器时将话音输出路径转换到第一扬声器装置。折叠器移动电话终端还包括安装在主体底部中的话筒装置。

25 本发明的上面与其他目的、特征和优点从下面结合附图的详细描述中将变得更加明显，在附图中相同标号表示相同部件。其中：

图1是根据本发明一个实施例的上翻盖型移动电话终端在翻盖闭合时的透视图；

30 图2是该上翻盖型移动电话机在翻盖打开时的透视图；

图3是表示根据本发明一个实施例的扬声器单元的结构图；

图4是表示根据本发明一个实施例用于转换话音输出路径的装置

的图；

图 5 是根据本发明一个实施例的折叠型移动电话终端在折叠器闭合时的透视图；和

图 6 是该折叠型移动电话终端在折叠器打开时的透视图。

5 图 7 是根据本发明另一个实施例的上翻盖型移动电话终端在翻盖闭合时的透视图；

图 8 是图 7 的上翻盖型移动电话机在翻盖打开时的透视图；

图 9 是根据本发明另一个实施例的折叠型移动电话终端在折叠器闭合时的透视图；和

10 图 10 是图 9 的折叠型移动电话终端在折叠器打开时的透视图。

下面将结合附图描述本发明的优选实施例。在下面描述中，由于众知的功能或结构将以不必要的细节模糊本发明，所以不具体描述这些功能或结构。

15 现在将结合图 1 与 2 更详细地描述移动电话终端。在图 1 中示出根据本发明一个实施例的上翻盖型移动电话终端，其中此电话终端的翻盖闭合。图 2 表示其翻盖打开的上翻盖型移动电话终端。此移动电话终端包括主体 100、翻盖 102 和用于机械地将翻盖 102 耦合到主体 100 的铰链装置 112。铰链装置 112 安装在 LCD(液晶显示器) 单元 104 的任一侧上，以便机械地将翻盖 102 耦合到主体 100，铰链装置 112 的轴固定在翻盖 102 的铰链关节 (knuckle) 110 上。这里，为了方便，图 1 与 2 有选择地表示 LCD 单元 104 的外露显示窗口和铰链装置 112 的外露部分。翻盖 102 具有延伸至铰链装置 112 的任一端的轴颈 108，并且铰链关节 110 形成在各个轴颈 108 的末端上。在此所示结构中，翻盖 102 绕点划线所示的轴 A1 旋转，从而相对主体 100 被打开和闭合。

25 还有，天线装置 106 设置在主体 100 上端的一侧上，并且 LCD 单元 104 设置在天线装置 106 下面。而且，按钮 114 与键板 116 设置 LCD 单元 104 下面。舌簧开关 120 置于主体 100 前侧的特定部分中，以致在闭合翻盖 102 时，遮盖该舌簧开关 120。磁铁 122 置于翻盖 102 的内侧，以致在闭合翻盖 102 时，磁铁 122 可以面朝向舌簧开关 120。舌簧开关 120 与磁铁 122 构成用于检测翻盖 102 的打开状态的翻盖打

开检测器。

参见图 3, 不同于常规的上翻盖型移动电话终端, 本发明的此新颖的上翻盖型移动电话终端包括两个独立的扬声器装置 118 与 124. 如图 3 所示, 第一与第二扬声器 118 与 124 装配在单个扬声器单元 130 中并随之安装在翻盖 102 中. 扬声器单元 130 由第一扬声器 118、第二扬声器 124 和隔板 (partition) 128 构成。第一与第二扬声器 118 与 124 分别安装在翻盖 102 的前与后 (即, 外与内) 侧上, 面向相反的方向, 而隔板 128 插在第一与第二扬声器之间。隔板 128 最好由阻止第一与第二扬声器 118 与 124 之间干扰的材料构成. 通过在翻盖 102 的任一侧上安装两个单独的扬声器, 用户在闭合翻盖 102 的情况下能通过第一扬声器 118 与另一方交谈。

在常规的上翻盖型移动电话终端中, 话筒装置一般安装在主体 100 的前面较低部分中。利用此常规的话筒设置, 如果用户在闭合翻盖 102 的状态中使用根据本发明定位 (即, 安装在翻盖任一侧上) 的第一扬声器装置 118, 与用户在打开翻盖 102 时使用第二扬声器装置 124 时的情况相比, 第一扬声器装置 118 与话筒装置之间的距离相对短。因此, 为了阻止在翻盖闭合时第一扬声器装置 118 与话筒装置 126 之间的影响, 话筒装置 126 最好安装在主体 100 的底部角落中。众所周知, 包括话筒装置的发射器与包括扬声器装置的接收器之间的距离应大于 14cm, 以配合用户的耳至嘴的距离。根据上述的, 话筒装置 126 安装在主体 100 的底部角落中, 以致第一扬声器装置 118 与话筒装置 126 之间的短距离不影响呼叫 (即, 与另一方的谈话)。

图 4 表示根据本发明一个实施例用于转换话音输出路径的装置。当翻盖或折叠器相对主体被打开时, 翻盖检测器检测到翻盖的打开状态, 并且控制器在翻盖打开时将话音输出路径转换到第二扬声器, 并在翻盖闭合时将话音输出路径转换到第一扬声器。

转换装置包括翻盖打开检测器 132, 而翻盖打开检测器 132 包括舌簧开关 120、磁铁 122 和电阻 R1. 如所示得, 舌簧开关 120 与电阻 R1 串联连接在电源电压 Vcc 与地之间, 电阻 R1 与舌簧开关 120 之间的连接点连到移动电话终端的微处理器单元 (MPU) 130 的输入接点。如图 2 所示, 舌簧开关 120 面朝向磁铁 122. 因此, 在翻盖 102 被打开时, 断开舌簧开关 120, 以致逻辑“高”信号提供 MPU134. 相反地,

当闭合翻盖 102 时，接通舌簧开关 120，以致逻辑“低”信号加到 MPU134。结果，MPU134 能通过翻盖打开检测器 132 监视翻盖 102 的打开与闭合状态。MPU134 如此进行编程，以便根据翻盖 102 的打开与闭合状态控制开关 138。即，在闭合翻盖 102 时，MPU134 将开关 138 连到第一扬声器装置 118，并在打开翻盖 102 时，MPU134 将开关 138 连到第二扬声器装置 124。这里，开关 138 具有连到声码器 136 的输出接点的公共接点、连到第一扬声器装置 118 的第一接触点和连到第二扬声器装置 124 的第二接触点，此开关 138 在 MPU134 的控制下将话音输出路径转换到第一与第二扬声器装置 118 与 124 之中所选的一个扬声器装置。与往常一样，声码器 136 编码从话筒装置 126 中输入的话音信号，以便提供编码的话音数据给 MPU134，并解码从 MPU134 中输入的话音数据，以便提供解码的话音信号给其话音输出接点。

结果，当闭合翻盖 102 时，话音输出路径转换到第一扬声器装置 118，以便用户能利用第一扬声器装置 118 与另一方交谈。因此，在收到输入呼叫之后，用户通过简单地按下一个按钮 114（例如，发送按钮）而不打开翻盖 102 也能应答输入呼叫。可选择地，当打开翻盖时，话音输出路径转换到第二扬声器装置 124，以便用户能平常地利用第二扬声器装置 124 与另一方交谈。同样，本发明也能应用于诸如图 5 所示的折叠型移动电话终端。

图 5 表示根据本发明一个实施例折叠器闭合时的折叠型移动电话终端，而图 6 表示折叠器打开时的折叠型移动电话终端。此折叠型移动电话终端包括主体 200、折叠器 202 和用于机械地将折叠器 202 耦合到主体 200 的铰链装置 208，铰链装置 208 形成在主体 200 的上端上，铰链关节 214 沿铰链到主体 200 的折叠器 202 的上端对称地形成在铰链装置 208 的两端上，互相面对。铰链关节 214 通过槽 216 固定在铰链装置 208 上。在这种结构中，折叠器 202 绕点划线所示的轴 A1 旋转，从而相对主体 200 被打开和闭合。

还有，天线装置 206 设置在主体 200 的上端一侧上，中心臂沿主体 200 的上端形成，而两个侧臂 212 形成在中心臂 210 的任一侧上。槽 216 配置在中心臂 210 于侧臂 212 之间。LCD 单元 204 位于天线装置 206 下方。而且，键板 218 设置在 LCD 单元 204 下面。舌簧开关 226 置于主体 200 前侧的特定部位，以致在闭合折叠器 202 时遮盖舌簧开

5 关 226. 磁铁 228 置于折叠器 202 的内侧, 以致在闭合折叠器 202 时, 磁铁 228 可以面朝向舌簧开关 226. 舌簧开关 226 和磁铁 228 构成用于检测折叠器 202 的打开状态的折叠器打开检测器. 这里, 为方便起见, 图 4 与 5 有选择地示出 LCD 单元 104 露出的显示窗口和铰链装置 208 的露出部分.

10 与图 1 与 2 所示的上翻盖型移动电话终端一样, 此新颖的折叠型移动电话终端也包括两个单独的扬声器 220 与 224. 以相同的方式, 第一与第二扬声器 220 与 224 装配在单个扬声器单元中, 并分别安装在折叠器 202 的前与后 (或外与内) 侧上, 面向相反的方向, 而隔板插在第一与第二扬声器之间. 因此, 用户在折叠器 202 闭合时通过第一扬声器 220 能与另一方交谈. 另外, 话筒装置 222 以与图 1 和 2 所示的相同方式安装在主体 200 的底部角落中.

15 基本上, 图 5 与 6 的折叠型移动电话终端以与图 1 和 2 的上翻盖型移动电话终端相同的方式操作. 因此, 用于根据折叠器 202 的打开与闭合状态将话音输出路径转换到第一或第二扬声器 220 或 224 的电路具有与图 4 的电路相同的结构.

20 结果, 在闭合折叠器 202 时, 话音输出路径转换到第一扬声器 220, 以便用户能利用第一扬声器 220 与另一方交谈. 因此, 在收到输入呼叫时, 用户通过简单地按下安装在主体 200 一侧上的按钮 230 即使不打开折叠器 202 也能应答输入呼叫. 可选择地, 当打开折叠器时, 话音输出路径转换到第二扬声器 224, 以便用户能普通地利用第二扬声器 224 与另一方交谈.)

25 如上所述, 上翻盖型或折叠型移动电话终端具有包括面朝翻盖或折叠器的前与后侧的第一与第二扬声器的扬声器单元, 并根据翻盖或折叠器的打开与闭合状态将话音输出路径转换到第一与第二扬声器. 因此, 用户能与另一方通信而不打开翻盖或折叠器.

图 7 表示根据本发明的另一实施例的上翻盖型移动电话终端在翻盖闭合时的情况, 图 8 表示当翻盖打开时的该上翻盖型移动电话终端.

30 与图 1 和图 2 中所示的翻盖型移动电话终端不同, 图 7 和图 8 的上翻盖型移动电话终端包括两个分开的扬声器装置 300 和 302 (见图 7). 以与通常的扬声器装置同样的方式将第一扬声器装置 300 安装在

翻盖 102 的内侧。然而，将第二扬声器装置 302 安装在主体 100 的前上部，使得当翻盖 102 闭合时翻盖 102 不覆盖第二扬声器装置 302。通过加入第二扬声器装置 302，在翻盖 102 闭合时用户可通过第二扬声器装置 302 与另一方交谈。

5 图 7 和 8 的上翻盖型移动电话终端与图 1 和 2 的上翻盖型移动电话终端基本上以同样方式工作。因此，根据翻盖 102 的打开或闭合状态转换话音输出路径到第一或第二扬声器 300 或 302 的电话具有与图 4 的同样结构。

10 图 9 表示根据本发明另一实施例的折叠型移动电话终端在折叠器闭合时的情况，图 10 表示在折叠器打开时的该折叠型移动电话终端。

与图 7 和图 8 中所示的上翻盖型移动电话终端不同，该新的折叠型移动电话终端也包括两个分开的扬声器装置 304（见图 10）和 306（见图 9）。以与通常的扬声器装置同样的方式将第一扬声器装置 304 安装在折叠器 202 的内侧。然而，将第二扬声器装置 306 安装在折叠器 202 的外面上部，通过加入第二扬声器装置 306，当折叠器 202 闭合时用户可通过第二扬声器装置 306 与另一方交谈。

20 图 9 和 10 的折叠型移动电话终端与图 1 和 2 的上翻盖型移动电话终端基本上以同样方式工作。因此，根据折叠器 202 的打开或闭合状态转换话音输出路径到第一或第二扬声器 304 或 306 的电路具有与图 4 的同样结构。)

如上所述，所述上翻盖型或折叠型移动电话终端具有安装在不同位置的第一和第二扬声器装置，使得当翻盖或折叠器打开时使用第一扬声器装置，而当翻盖或折叠器闭合时使用第二扬声器装置。而且，根据翻盖或折叠器的打开或闭合状态，该移动电话终端将话音输出路径转换到第一和第二扬声器装置之一。因此，用户可以在不打开翻盖或折叠器的情况下与另一方交谈。

虽然本发明已结合其中某个优选实施例进行表示和描述了，但本领域技术人员应理解：可以对此在形式和具体细节中进行各种变化而不脱离所附权利要求书所定义的本发明的精神和范畴。例如，话筒装置可安装在主体底部中心上。还有，在话筒装置与扬声器装置之间的短距离不影响呼叫的情况下，话筒装置可安装在主体的前面较低端中。

993.05.10

说 明 书 附 图

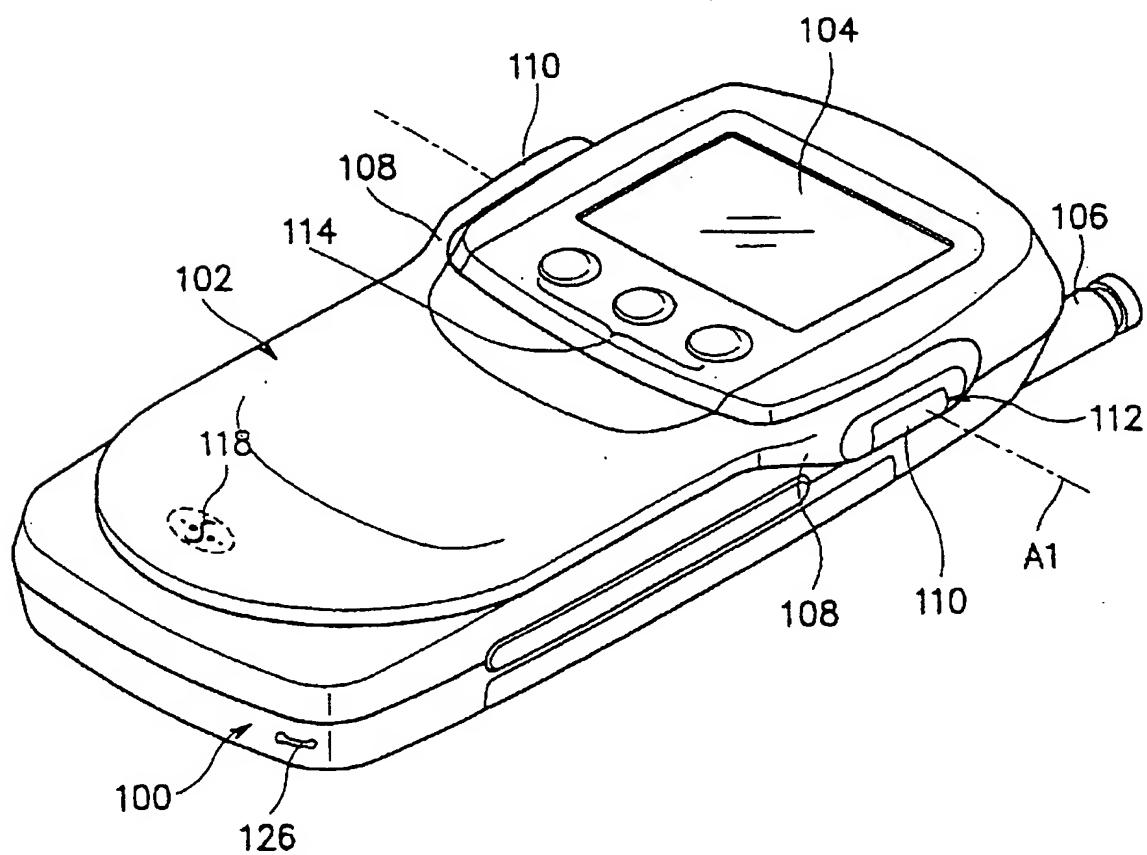


图 1

99-05-001

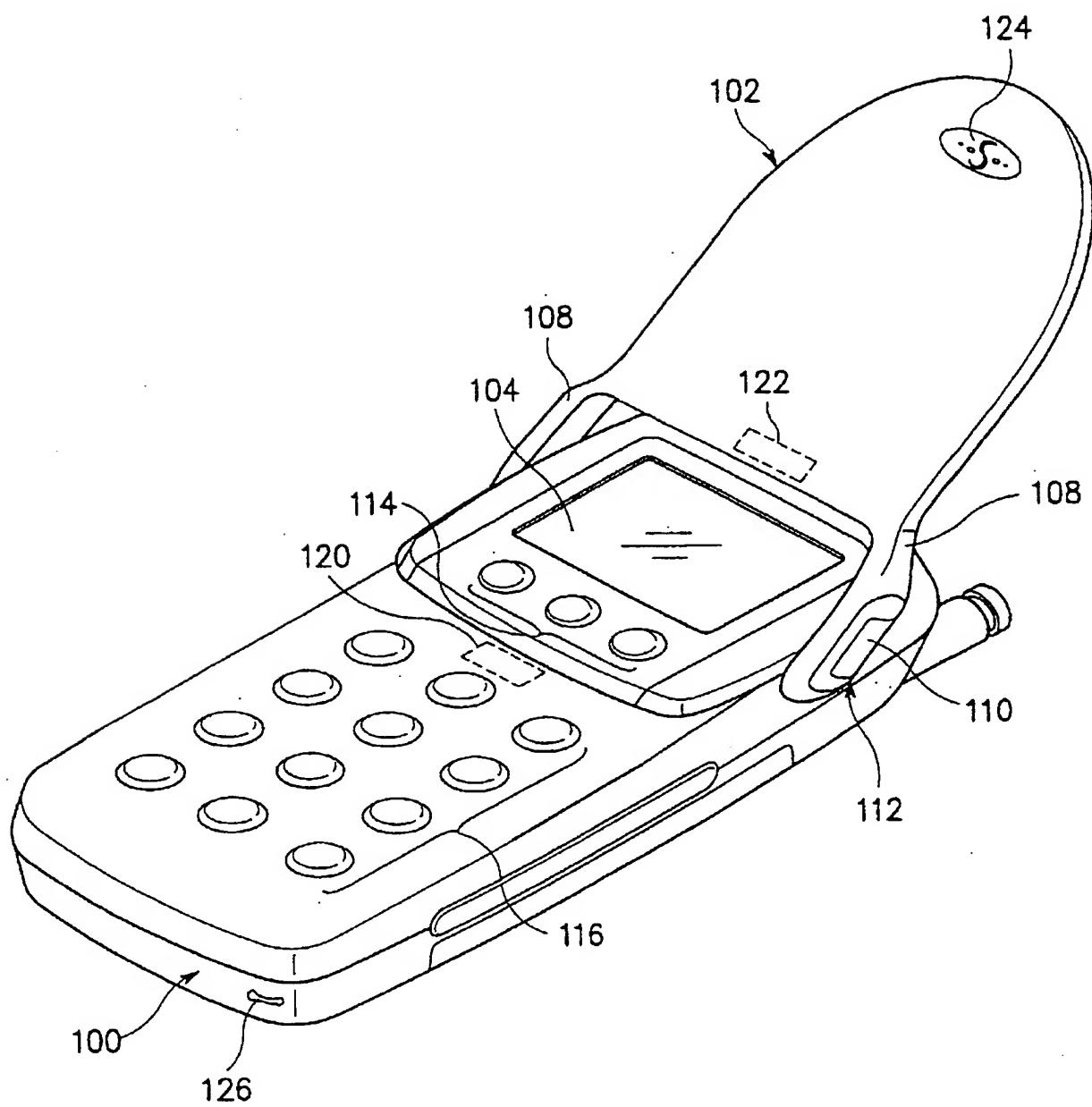


图 2

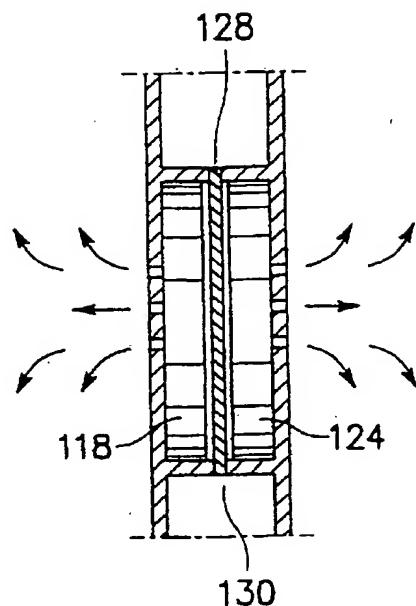


图 3

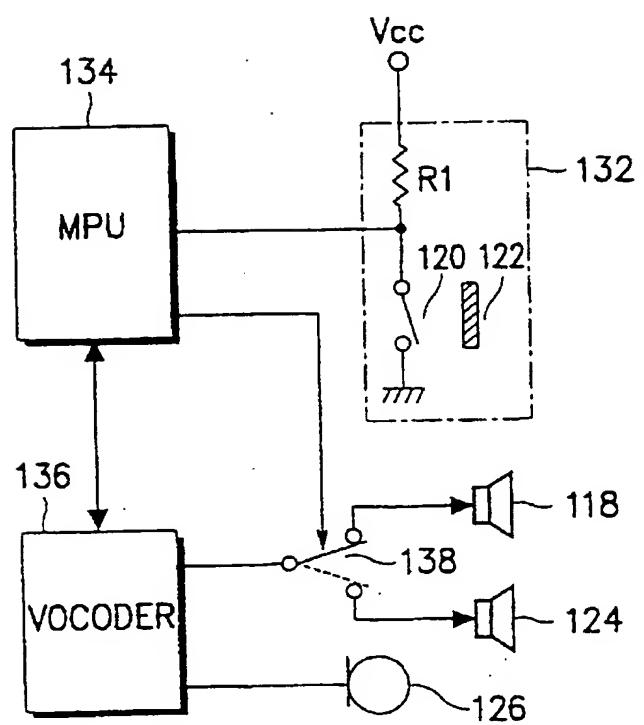


图 4

99.05.20

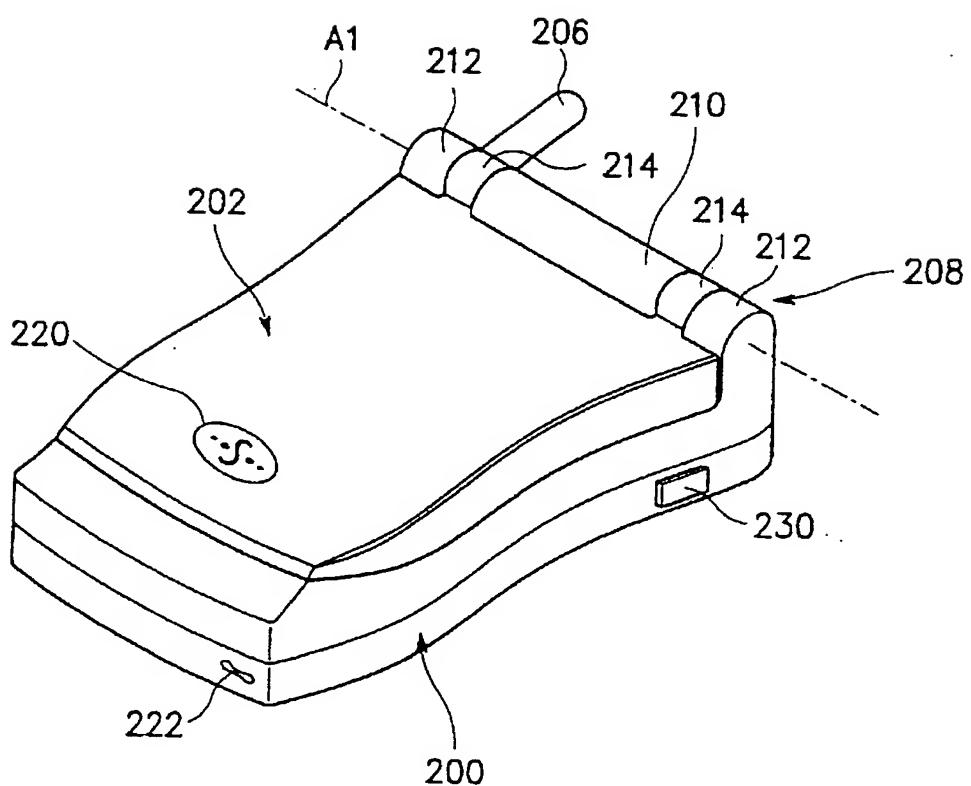


图 5

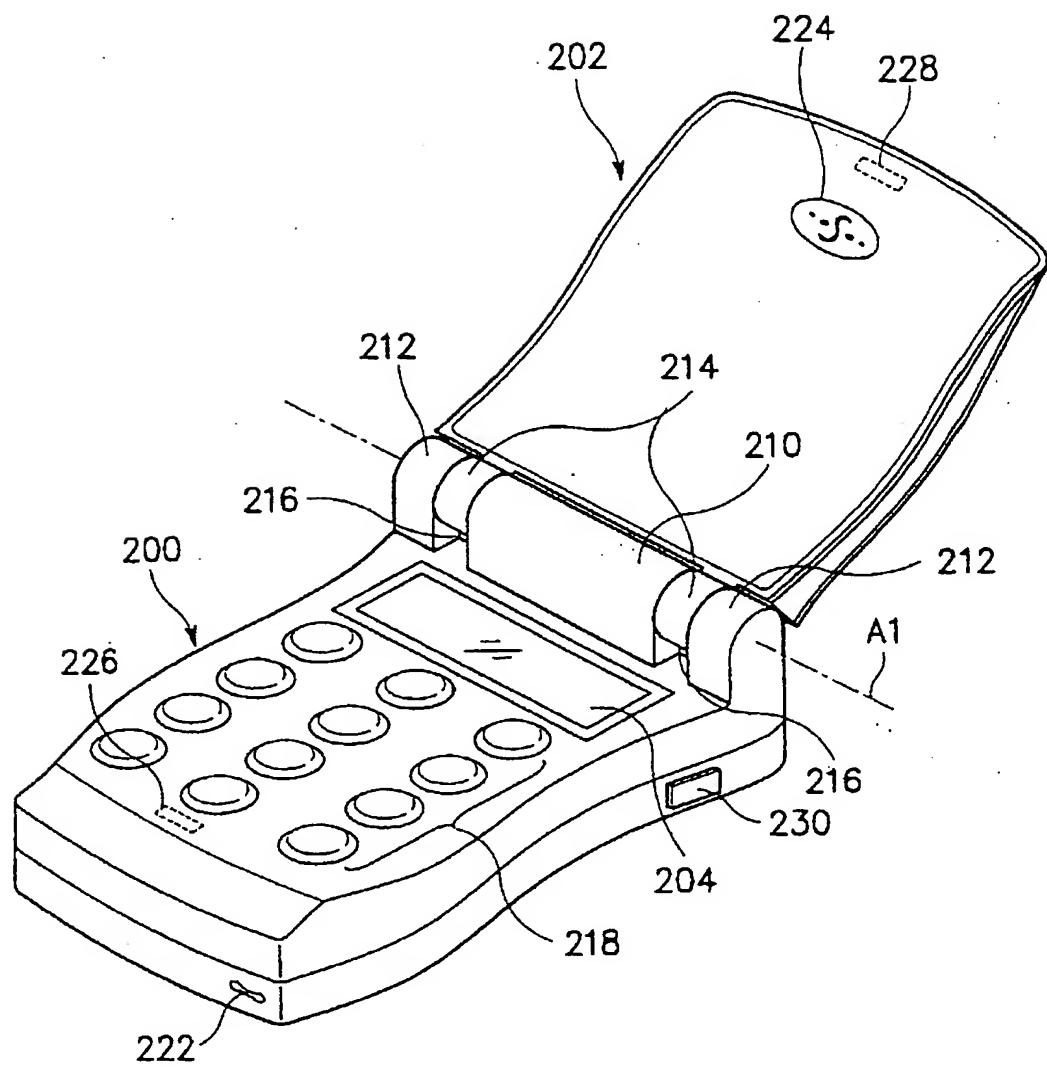


图 6

99-05-20

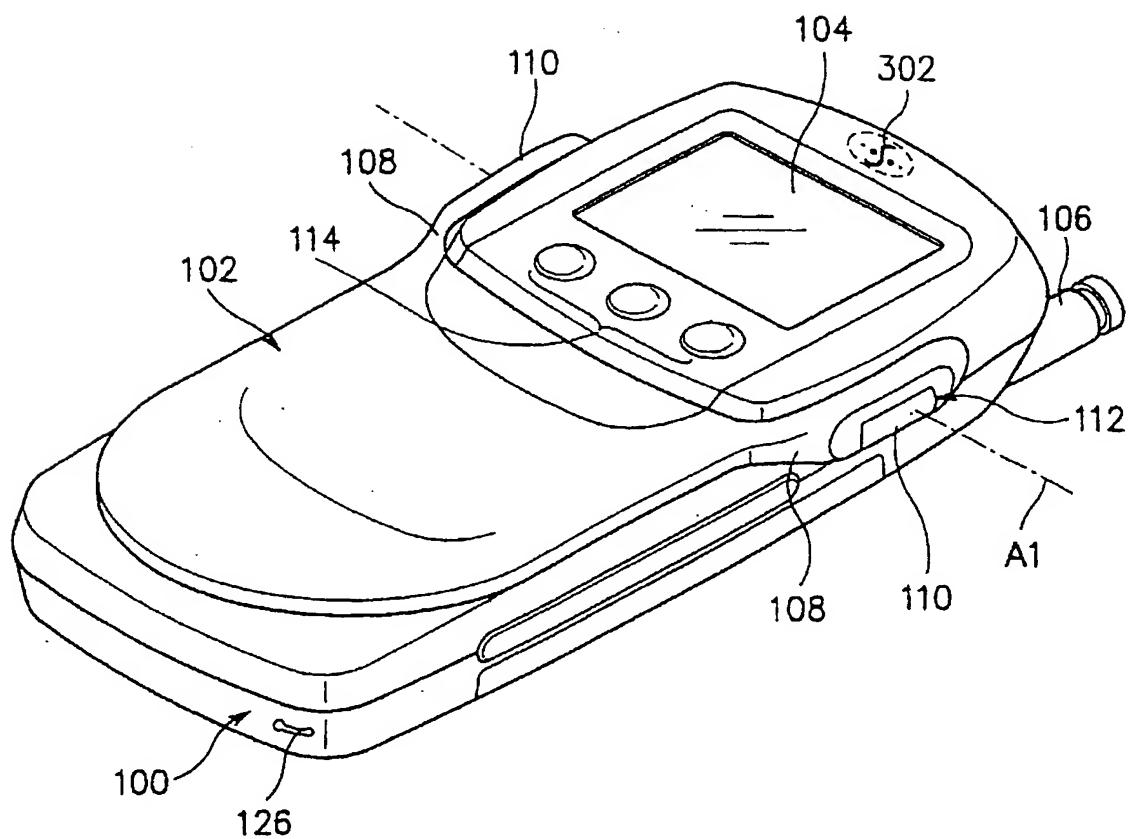
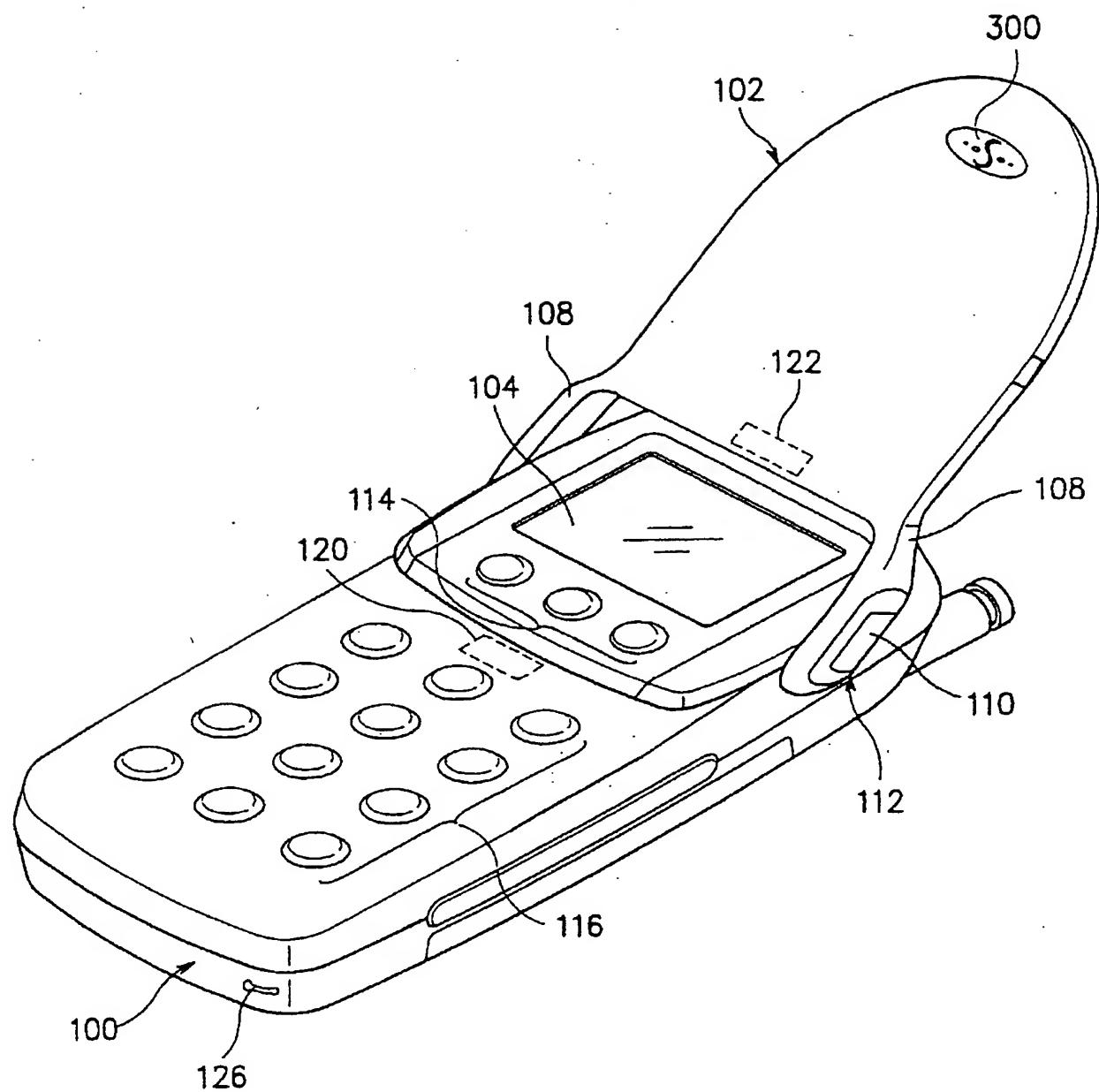


图 7

96-05-000



图

8

99-05-001

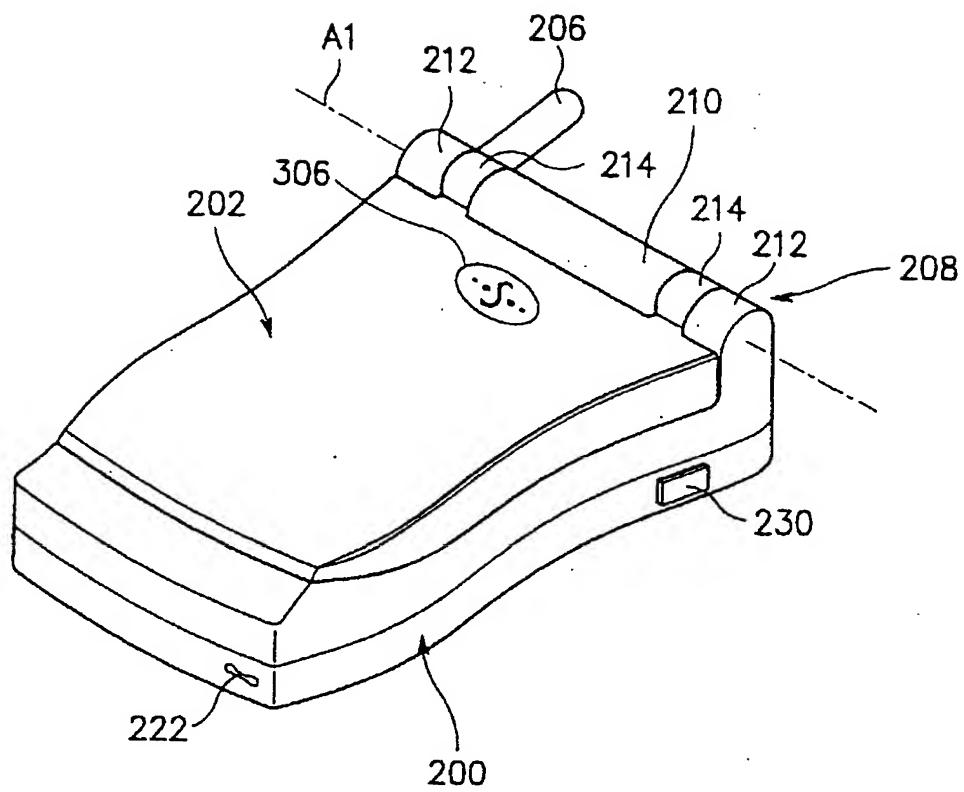


图 9

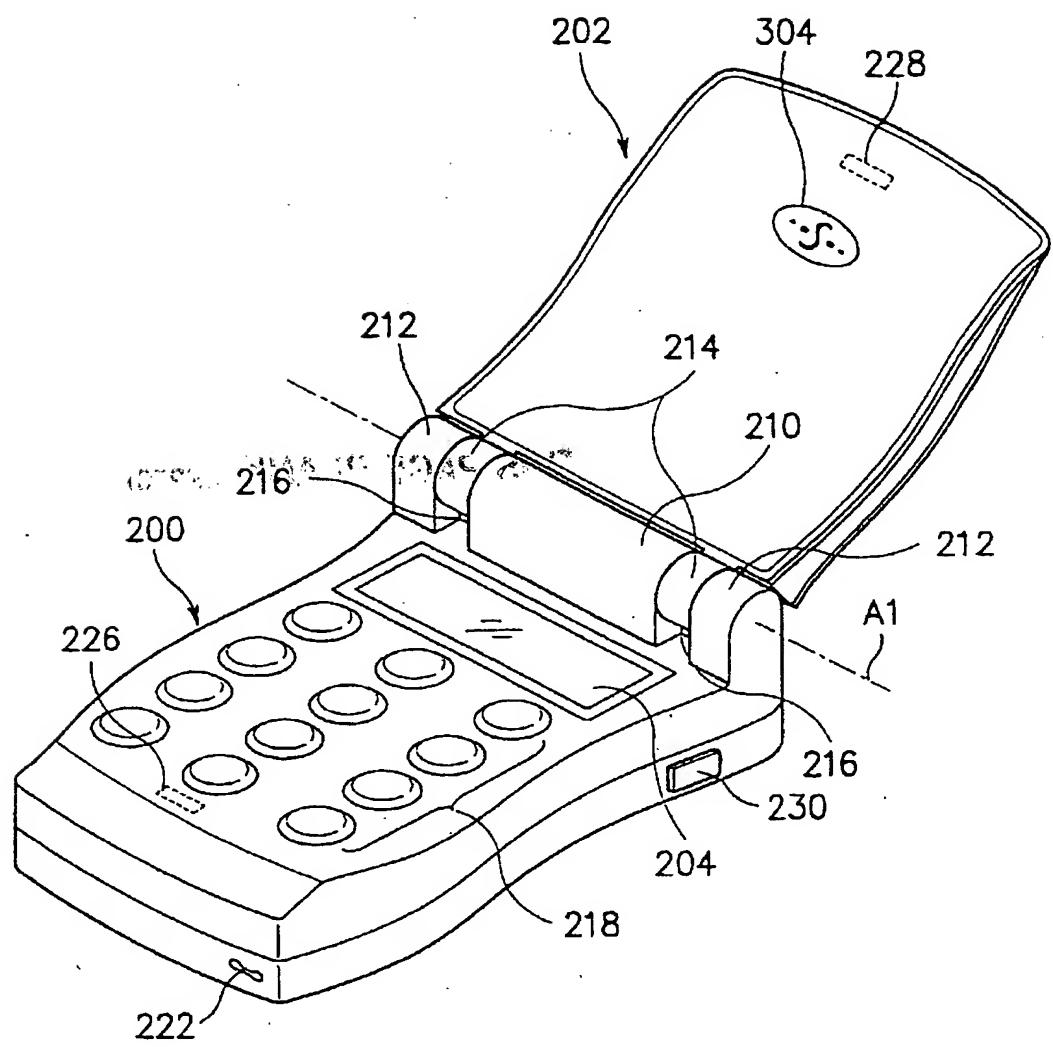


图 10

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